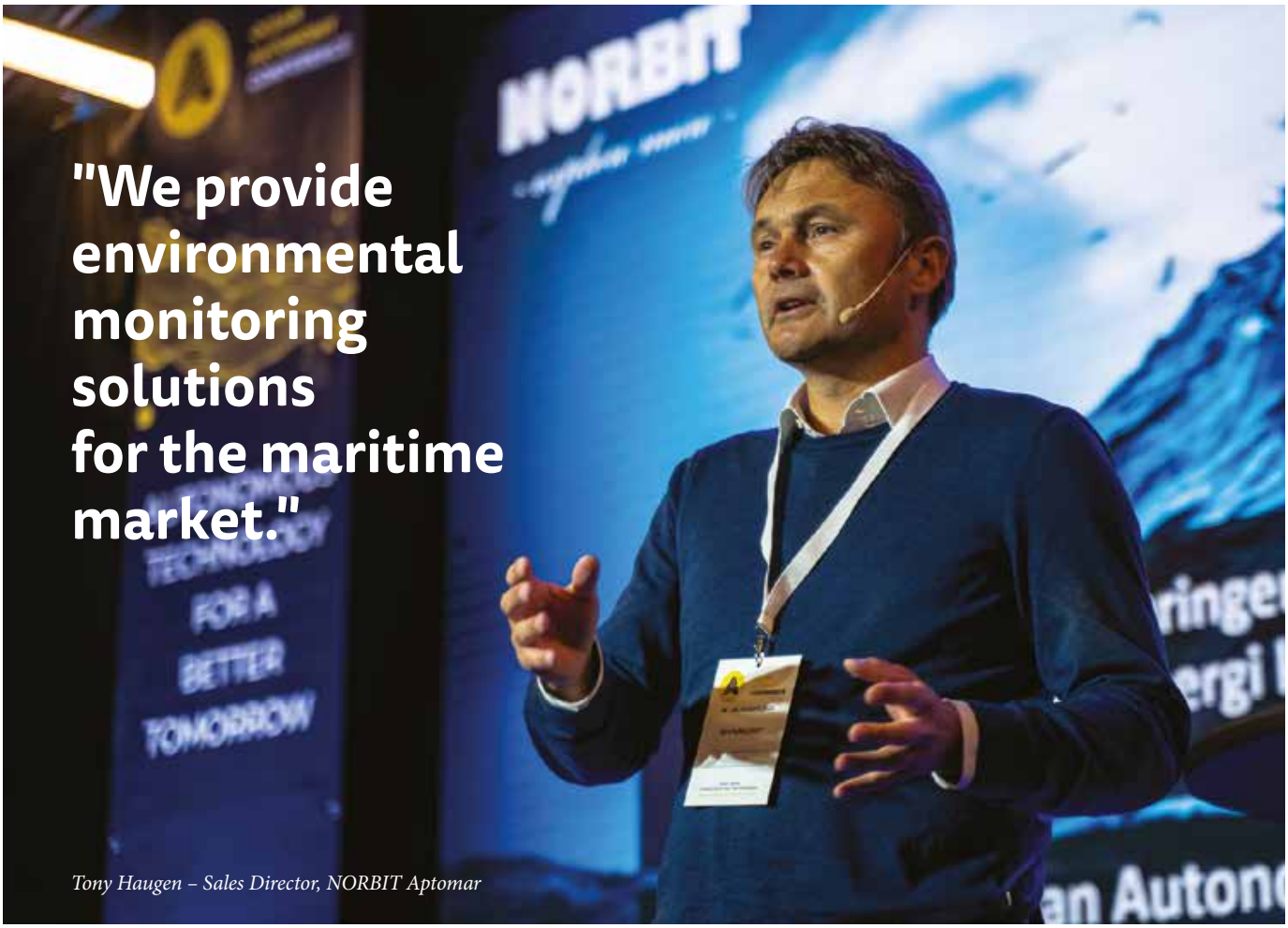


Tony Haugen – Sales Director, NORBIT Aptomar

NORBIT Aptomar, a part of NORBIT Oceans, provides environmental monitoring solutions for the maritime market. This is done by integrating sensors data from the air, the sea surface and subsea into an advanced GIS-based framework.

Tony Haugen, Sales Director, NORBIT Aptomar says:
"We acknowledge that we need maritime transport, ports, terminals and offshore energy for many years to come. We need the energy, we need to transport goods, and the oceans will continue to be extremely important for this. Even if we meet the Paris goals set for 2030, fossil energy will still be a major part of the energy mix for many years towards 2050. "Business as usual then" people say, but no. It will not be business as usual for the maritime segment in my view. We experience an industry in full transformation. The drivers are many, the following being among the most important ones in my view:

1. Cost as usual, and new threats force us to re-think our strategies as we suddenly see new types of risks.
2. Digitalisation, IoT, AI, ML, increased connectivity to mention a few, enables new business models and ways to handle our operations more efficiently. Early movers that are able to adapt to this successfully, will gain terrain quickly.
3. Climate changes and a global consensus of the environmental challenges require changes in the mindset of everyone, including the maritime industry. Our operation's "footprint" has an increasing financial cost in addition to the obvious cost to our environment.
4. Our ESG rating will have a major impact on our business if we are to be attractive for investors, customers and young talents.

With this in mind, we in the maritime segment must do everything we can to make sure that our maritime operations are safe, secure, and sustainable. We need to document our clean operations as well as enable full transparency and show that we have nothing to hide. The public "license to operate" will be more and more important if we are to continue to expose our environment to our operations.

The NORBIT Aptomar solutions are designed to aid maritime businesses to conduct their operations in a responsible and sustainable way." This is the way we will contribute to keep our industry attractive also in the future.

The NORBIT Aptomar solutions
Managing diverse maritime operations in terms of asset protection, acute chemical pollution, plastic waste pollution, fishery inspections, vessel traffic monitoring and emergency response, require customized solutions based on analyses, hardware, software and human expertise.

SeaCOP Workstation

The requirements for special sensors, dataprocessing and visualization, force the operators to rely on parallel, standalone systems. This is, however, an expensive approach with low operational efficiency. By choosing NORBIT Aptomar SeaCOP as the framework and backbone of the monitoring, detection and emergency response system, the operator need only one screen solution, and can select the relevant functionality from a large number of specialized modules. Each module adds a set of tools that are tailored to meet the needs for the operations in question. Typical application areas for SeaCOP are within general environmental monitoring, offshore energy, maritime law enforcement, ports and harbours, coastal surveillance, waterside security and search and rescue (SAR) operations to mention a few.

Sensors and data processing products

What ultimately decides the functionality and range of the SeaCOP, are the sensors and data sources as well as the data processing units integrated into the system. A large number of sensors, sensor platforms and data processing units are supported:

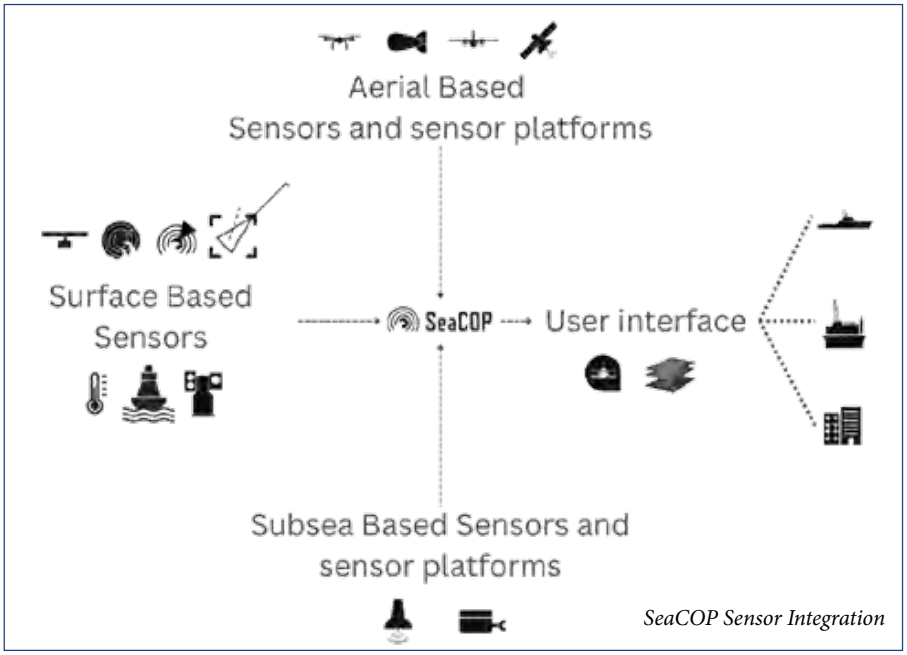
Sensors:
- Radar
- Automatic Identification Systems (AIS)
- Stabilized infrared (IR) and daylight camera systems
- Environmental sensors (air particles, Sx/Nx , radioactive radiation etc.)
- SAT imagery (oil spills, chlorophyll, vessels etc.)
- Sonars
- Vessel navigation sensors

Sensor platforms:
- Underwater Autonomous Vehicles (UASs)
- Remotely Operated Vehicles (AUVs)
- Unmanned Surface Vehicles (USV)
- Unmanned Aerial Vehicles (UAVs)
- MetOcean buoys

Data processing and real time analyses:
- Vessel Tracking
- Small Target Detection
- Oil Spill Detection
- Ice detection

To meet the new operational requirements and activities in an industry that is getting fit for a sustainable future, new sensors and systems are added continuously. This makes SeaCOP both future-proof and scalable.

By merging, co-analysing and displaying geo-referenced data in an electronic chart interface, developing new filters and detection algorithms, using geo-fencing and alarm-management, and deploying automation and artificial intelligence, NORBIT Aptomar work to make SeaCOP become the best possible decision support tool for the operations at hand.



SeaCOP Sensor Integration


Shore Based Control Room

Multiple users on multiple locations

The SeaCOP is not confined to a oneperson, one system solution. Depending on what kind of operation and what kind of resources that are required, SeaCOP can be everything from a single vessel installation to a complex setup with one centralised operator managing multiple operations on multiple locations. During any normal daily monitoring operation or unwanted incident, SeaCOP provides all the involved resources with a full situational overview and common operating picture. It supports the users with dataflow, task management and documentation on the chain of events before, during and after an incident, information that is of high value for planning, early warning and effective counter measures in the future.

The NORBIT Aptomar SeaCOP system is one of the first single-solution monitoring and detection systems that combines the functionality needed to safeguard both personnel, the environment and assets for most maritime operations, giving full overview both above and below water.

Customer groups

NORBIT Aptomar delivers environmental safety solutions to the industry leaders within the Offshore Energy Sector:

Vår Energi - Goliat

Goliat is an oil field located in the Barents Sea offshore Norway. The field is operated by Vår Energi Norge, a subsidiary of the Italian energy company Eni. The FPSO Goliat and the Shuttle Tankers bunkering at the field uses NORBIT Aptomar's oil spill detection system for oil spill preparedness and response, monitoring the operation from multiple perspectives.

Vår Energi chose to use NORBIT Aptomar's SECurus system as part of their overall oil spill preparedness strategy. In 2016 at the start of production, Goliat was the northernmost operated offshore oil field in the world. The company recognized the importance of having advanced technology for detecting and responding to oil spills in the harsh environment and remoteness of the Barents Sea. They chose NORBIT Aptomar's Securus system because of its proven track record in providing reliable and effective oil spill detection and response capabilities also in total darkness. It is a testament to the importance of proactive and comprehensive oil spill preparedness strategies within the offshore oil and gas segment, especially in environmentally sensitive areas like the Barents Sea.

The Norwegian Coastal Administration (NCA), Norwegian Coast Guard (NCG) and the Norwegian Cleans Seas Association for Operating Companies (NOFO)

The NORBIT Aptomar technology is a central part of the Norwegian oil spill preparedness. NOFO is the organization tasked with securing the oil spill contingency on the Norwegian continental shelf on behalf of the member companies within offshore oil and gas. Along with the Norwegian Coast Guard and the


Hilda Knutsen and Goliat – Photo Credit to Vår Energi and Knutsen

Norwegian Coastal Administration, both working on the behalf of the government, they all make sure Norway has suitable, robust and modern technology for combating oil spills. They are using the Aptomar systems for:

- Detecting, locating, and estimating the total area of combatable oil.
- Predicting drift of an oil spill.
- Support for finding the most efficient combating method.
- Showing the effect of the action taken and documenting it.

The system enables coordination of bigger operations and sharing of sensitive live information between sea, air, and land resources. Sharing a Common Operation Picture between parties involved, it enables the decision makers to take better decisions, faster. To this day, spills from offshore oil and gas operations have never reached Norwegian shores.

Norway is the only country in the world that permits planned and controlled spills of mineral oil in the sea for exercise- and research purposes, making sure the equipment and procedures are working as intended. This has created a global interest for the equipment and technology used in the Norwegian oil spill preparedness, setting the standard of best practices.

Aerial IR-input by drone

Enbridge

The recently completed Enbridge Straits Maritime Operations Center (ESMOC) utilizes NORBIT Aptomar's SeaCOP situational awareness platform to monitor its subsea assets in the Straits of Mackinac, Michigan, USA. A significant risk from each of the many passing vessel comes from potential anchor strikes, so to secure the safety of the gas-transporting pipelines, the SeaCOP system was set up to automatically detect, identify, and document each vessel transiting the Straits. As such, camera sensors monitor each vessels anchoring system, confirming proper stowage while transiting.

EO & Radar sensors, photo credit: Enbridge

Enbridge and NORBIT partnered up and installed a system for monitoring, detecting, and documenting safe operation. The SeaCOP system's intuitive user interface provides the operators with a 24-hour notice in advance of planned vessel traffic, allowing for investigation of vessel details such as ownership, cargo and any incident history. The SeaCOP solution integrates seven sites on both sides of the Strait fitted with radar and electro-optical sensors, including NORBIT Aptomar's SECurus and SeaView cameras, bringing critical decision support tools to the operators of the 24/7-operated ESMOC.

In partnership with NORBIT Aptomar, Enbridge is going the extra mile to ensure a sustainable, safe, and transparent operation in the Straits of Mackinac. The company has reduced its risks for incidents, the local government has insight into a clean operation, and the public opinion has changed- giving a win-win scenario for all parties involved, as well as providing the company with a public license to operate. With the integration of the SeaCOP solution, Enbridge solved a safety risk of their operation, enabling them to have a proactive approach to alleviating risk to the environment.

NORBIT